



National Transportation Safety Board

The NTSB Safety Mission: From Investigation to Recommendation

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Board Member

Brotherhood of Locomotive Engineers and Trainmen
Legislative Representatives Workshop
September 23, 2013



- 1) determining the probable cause of transportation accidents**
- 2) making recommendations to prevent their recurrence**



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All Modes



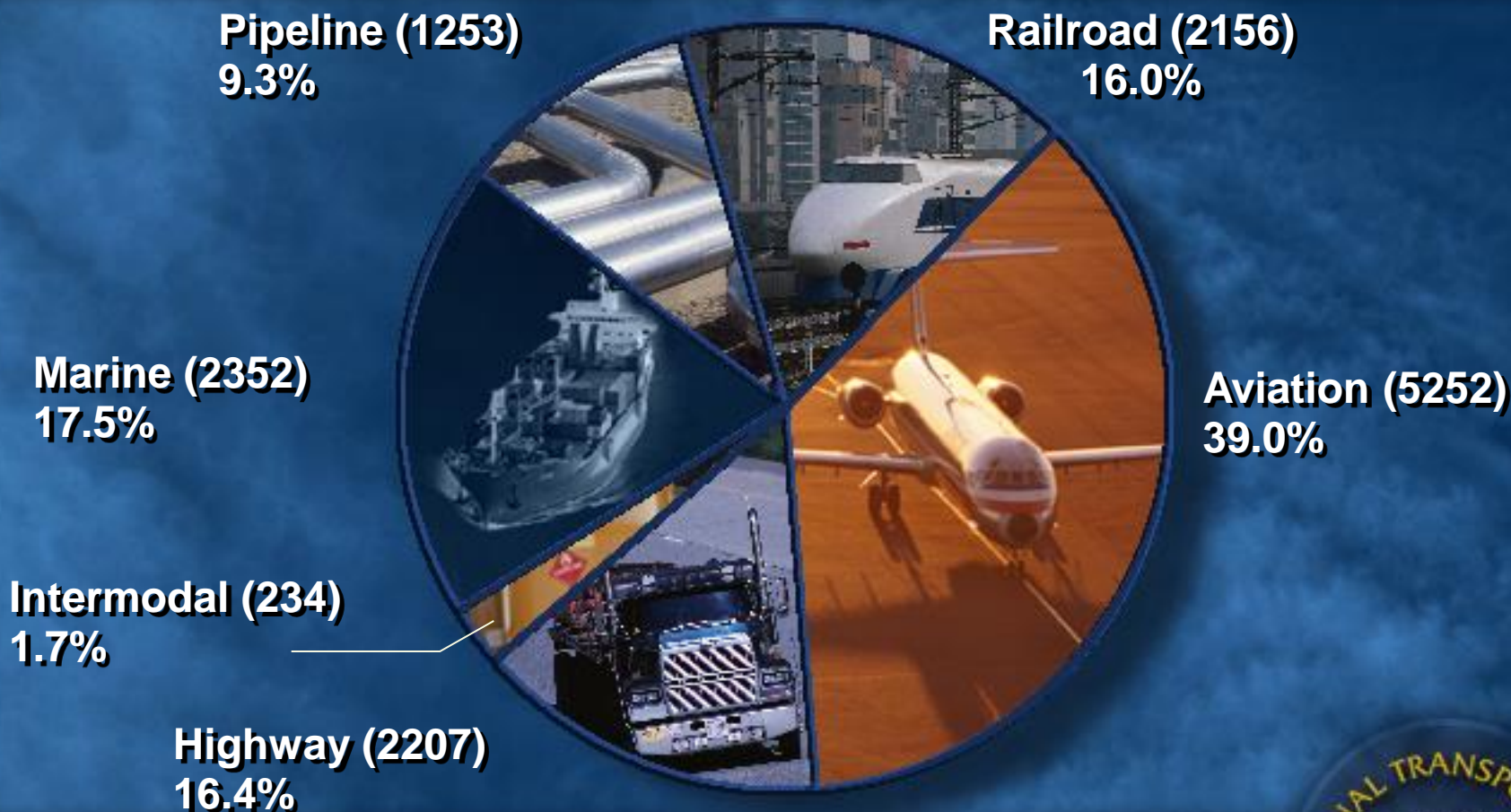
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Independent Federal Agency: Created in 1967

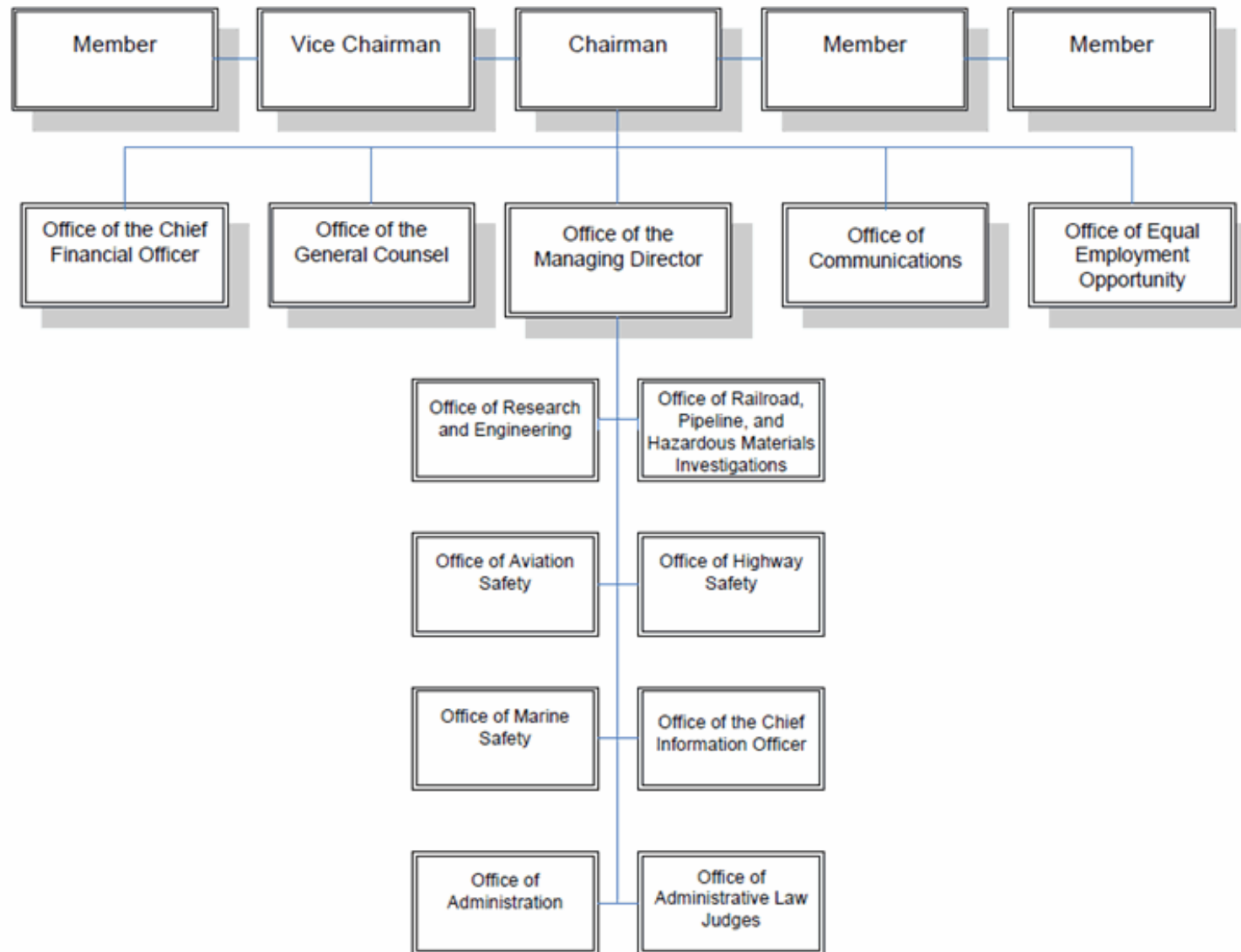
- >132,000 accident investigations
- 13,500+ safety recommendations
- ~ 2,500 organizations/recipients
- 82% acceptance rate



13,454 Safety Recommendations issued since 1967



NATIONAL TRANSPORTATION SAFETY BOARD



NTSB: The Board

- Five Members:
 - President nominates
 - Senate confirms



Mark Rosekind
Member



Chris Hart
Member



Debbie Hersman
Acting Chairman



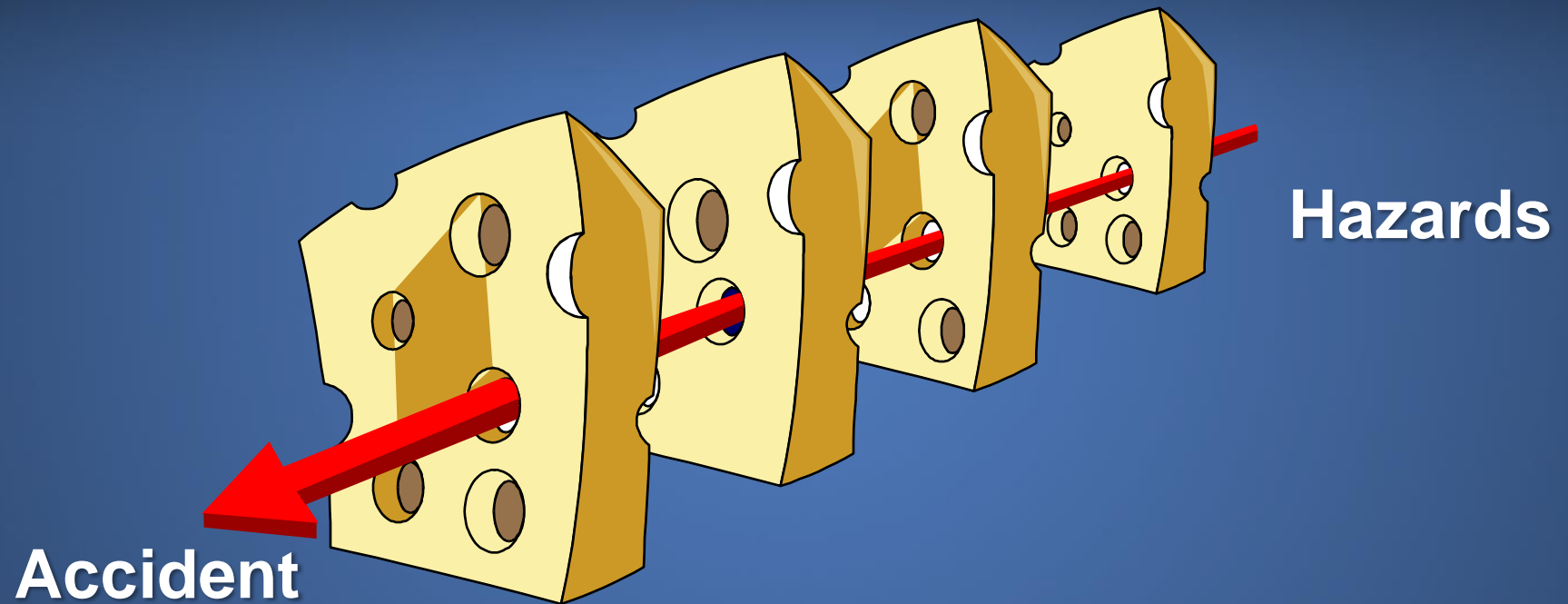
Robert Sumwalt
Member



Earl Weener
Member



“Swiss Cheese” Model (Reason)



Successive layers of defenses, barriers, and safeguards



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Honorable John K. Lauber:

No Accident \neq
Safe Operation



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NTSB Characterized as:

‘moral compass and industry conscience’

NTSB Chairman Deborah A.P. Hersman



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Track Path Animation

Collision Between Two BNSF Railway Freight Trains

Red Oak, Iowa

April 17, 2011

DCA11FR002



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Probable Cause (fatigue)

“ . . . failure of the crew of the striking train to comply with the signal indication requiring them to operate in accordance with restricted speed requirements and stop short of the standing train because they had fallen asleep due to fatigue resulting from their irregular work schedules and their medical conditions.”



Four Fatigue Factors +

- Sleep loss
- Continuous hours of wakefulness
- Circadian/time of day
- Sleep disorders
- Other considerations



Fatigue Risks

Fatigue can degrade
every aspect of
human capability.



Fatigue Risks

- degraded 20 – 50%+:

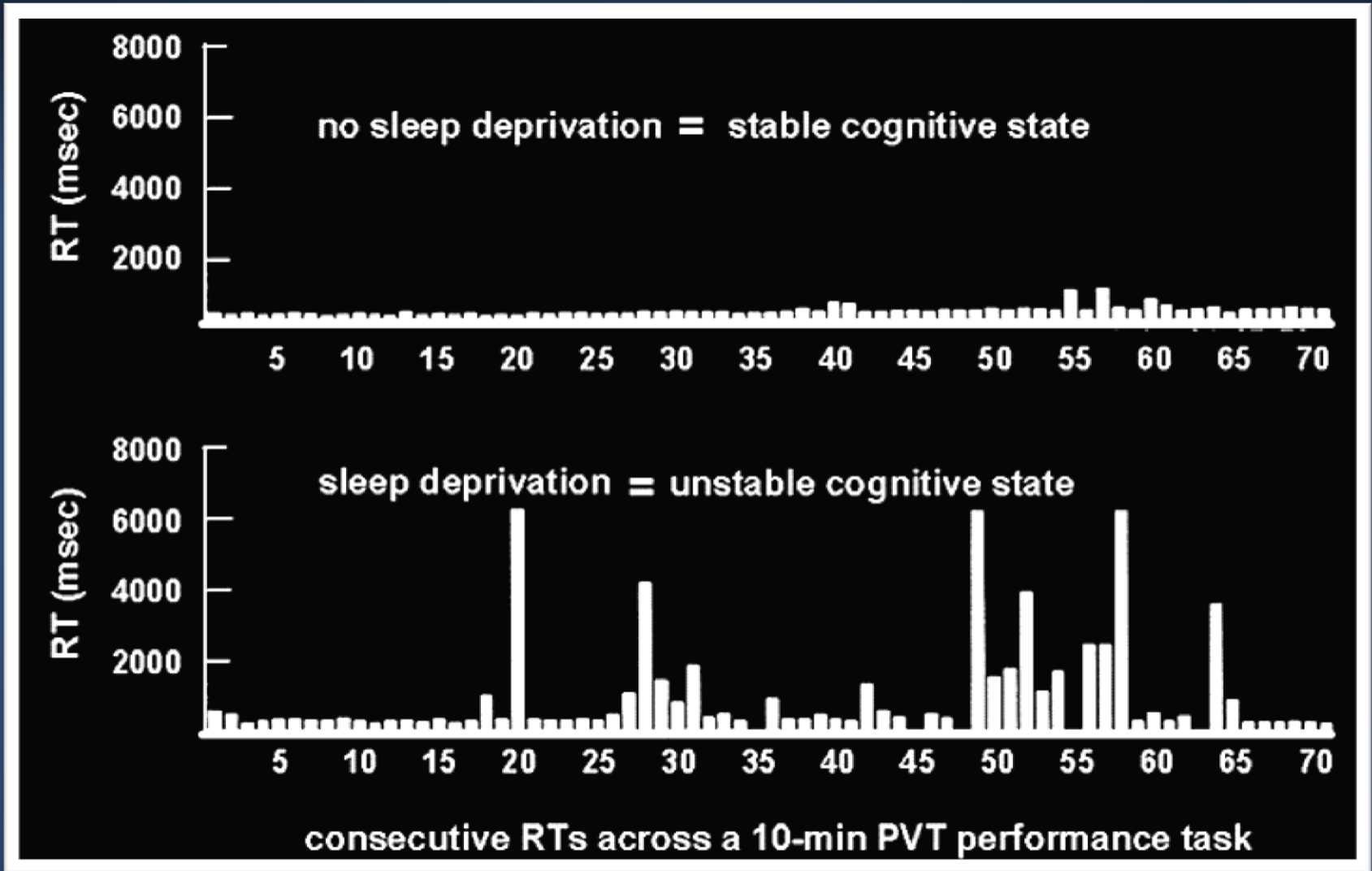
- reaction time
- memory
- communication
- situational awareness
- judgment
- attention
- mood

- increased:

- irritability
- apathy
- attentional lapses
- microsleeps



Fatigue and Reaction Times



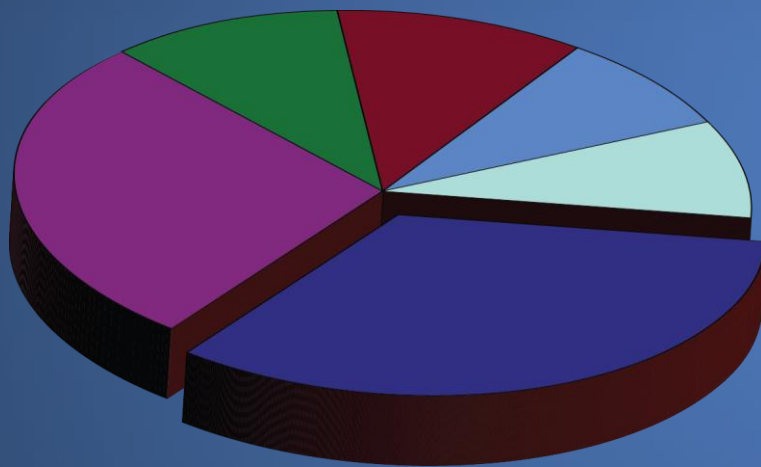
NTSB Recommendations

- MOST WANTED 1990 -2012
- ~200 fatigue recommendations



Complex Issue:

Requires Multiple Solutions



- Scheduling Policies and Practices
- Education/Awareness
- Organizational Strategies
- Healthy Sleep
- Vehicle and Environmental Strategies
- Research and Evaluation



NTSB Safety Recommendations: Fatigue Status (May, 2012)

- Total: 194
- Open: 48
- Closed: 146
- CUN*: 26

CUN = closed unacceptable



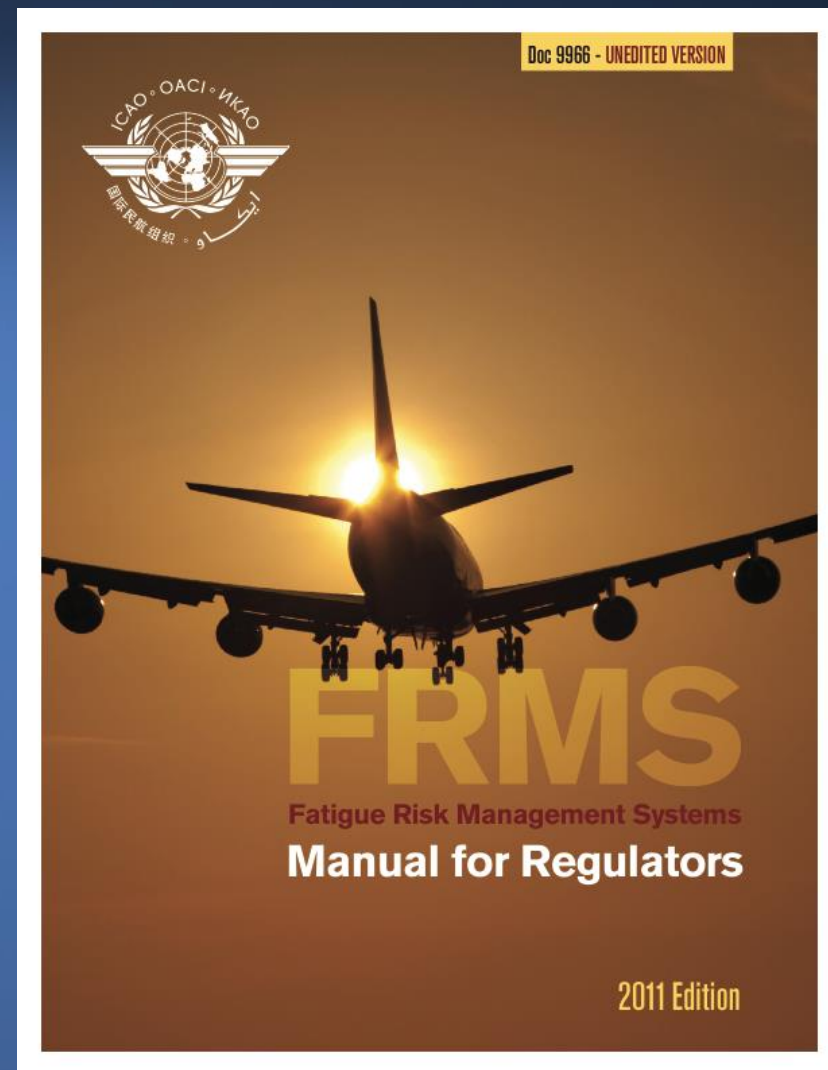
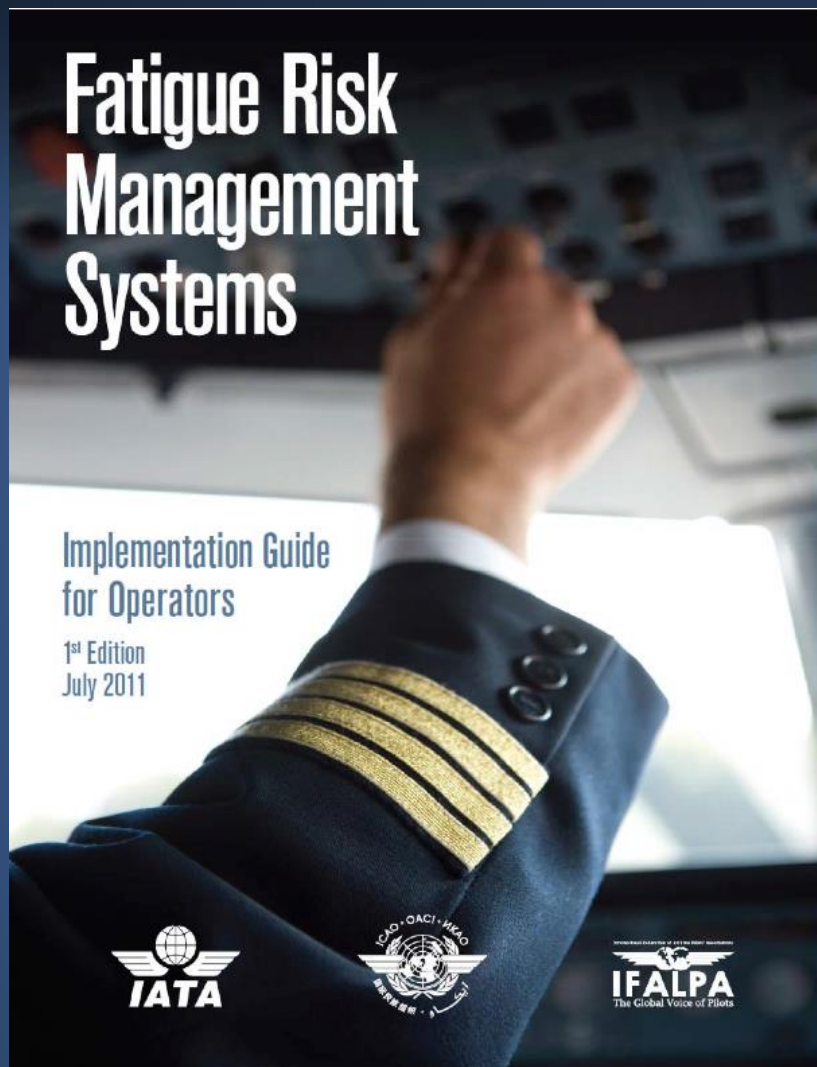
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NTSB Fatigue Recommendations: Fatigue Management Systems

- Develop guidance based on empirical and scientific evidence for operators to establish fatigue management systems
- Establish an ongoing program to monitor, evaluate, report on, and continuously improve fatigue management programs implemented by motor carriers to identify, mitigate, and continuously reduce fatigue-related risks for drivers.



Examples



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Distraction: 10 Years of NTSB Investigations



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Collision of Metrolink Train 111 With
Union Pacific Train LOF65-12
Chatsworth, California
September 12, 2008



Accident Report

NTSB/RAR-10/01

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PB2010-916301



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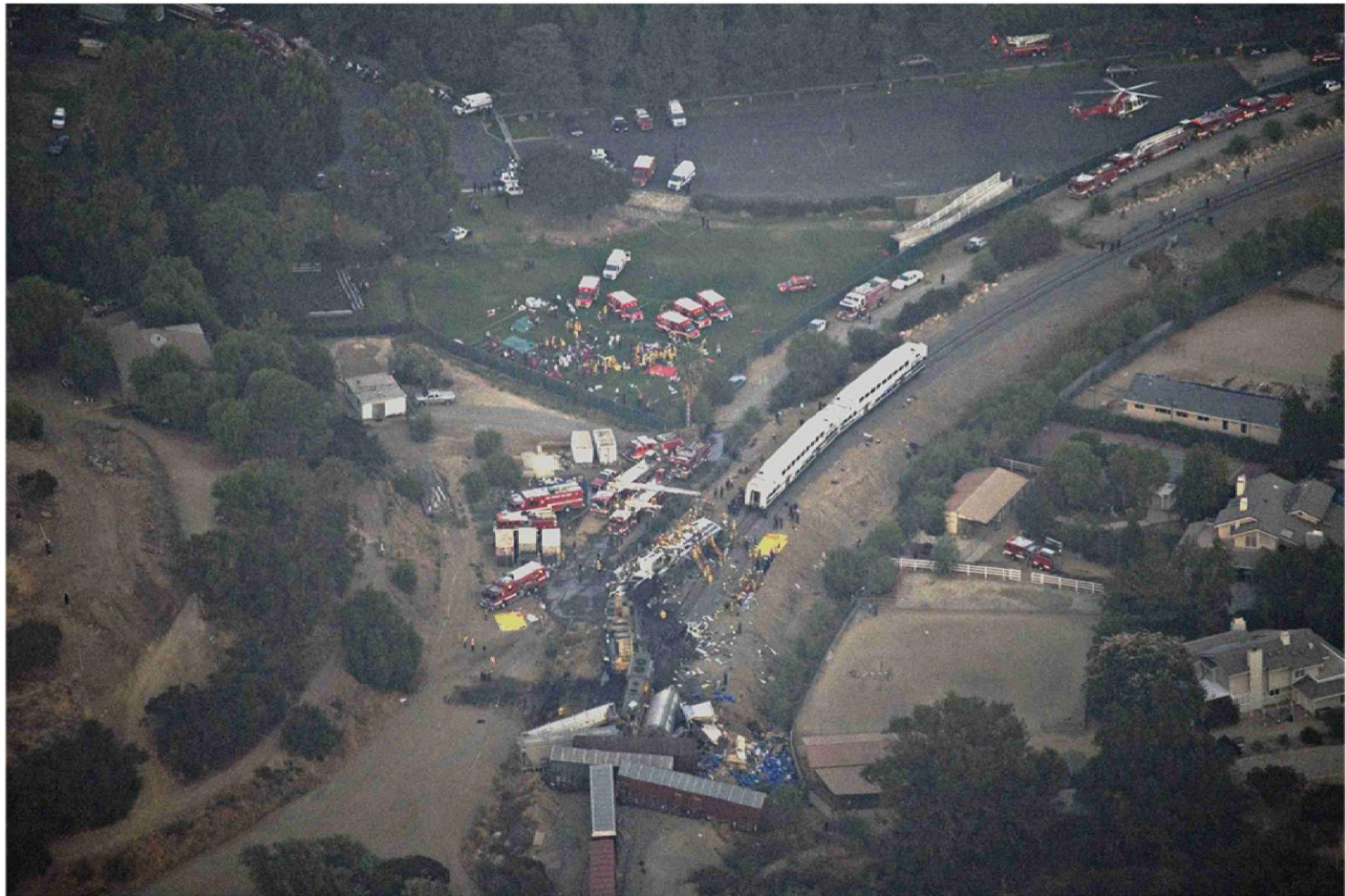
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Chatsworth, CA (September 12, 2008)

- Metrolink engineer's wireless records on day of accident:
 - sent/received 95 text messages
- during time responsible for train operation:
 - sent 21 text messages, received 21 text messages, 4 outgoing calls
- 28 day review: use on day of accident consistent with previous use



Chatsworth, CA (September 12, 2008)



Survival Factors Factual Report - Photo 9 - Aerial view of accident area (Metrolink)

25 fatalities, 135 injuries



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Probable Cause

“ . . . failure of the Metrolink engineer to observe and appropriately respond to the red signal . . . because he was engaged in prohibited use of a wireless device, specifically text messaging, that distracted him from his duties.”



Railroad Accident: Westville, IN January 6, 2012



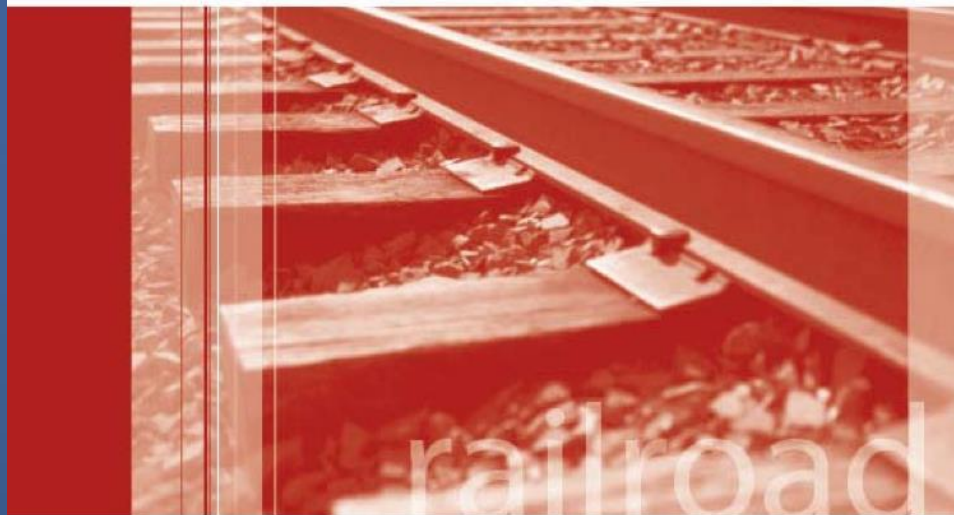
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Probable Cause

- “ . . . failure of the crew of train Q39506 to maintain vigilant attention to wayside signals, communicate effectively, avoid distractions from prohibited text messaging, . . . ”



Collision of Two Canadian National Railway Freight Trains
near Two Harbors, Minnesota
September 30, 2010



Accident Summary Report

NTSB/RAR-13/01/SUM
PB2013-104865



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5 injuries



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Recommendation

- **To the Federal Railroad Administration:**
 - Identify, and require railroads to use in locomotive cabs, technology-based solutions that detect the presence of signal-emitting portable electronic devices and that inform the railroad management about the detected devices in real time. (R-13-5)



Recorders



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June 24, 2012
Goodwell,
Oklahoma



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Head-On Collision of Two Union Pacific Railroad
Freight Trains Near Goodwell, Oklahoma
June 24, 2012



Accident Report

NTSB/RAR-13/02
PB2013-107679



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Recommendations

- To All Class I Railroads:

Install in all controlling locomotive cabs and cab car operating compartments crash- and fire-protected inward- and outward-facing audio and image recorders. The devices should have a minimum 12-hour continuous recording capability. (R-13-26)



Recorders Issues

- Safety investigations
- Policies and procedures
- Protections/confidentiality
- Safety culture (non-punitive)
- Apply/enhance existing models



September 10-11, 2013



The forum will address ways of enhancing safety by providing first-hand accounts of efforts from both transportation and non-transportation industries to develop effective safety cultures and to implement specific safety-enhancement techniques.

www.nts.gov



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